This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-4. (Canceled)

5. (Previously Amended) A semiconductor device comprising:

a mounting substrate and at least one optical signal transfer device embedded in the mounting substrate for transferring an optical clock signal;

a plurality of semiconductor chips mounted on the mounting substrate; and

a light-receiving element formed in at least one of the semiconductor chips and that directly contacts the optical signal transfer device for receiving the optical clock signal,

wherein the optical clock signal is transferred among the plurality of semiconductor chips through the optical signal transfer device.

6. – 10. (Canceled)

11. (Previously Amended) A semiconductor device, comprising:

a semiconductor chip and a light-receiving element formed on the semiconductor chip for receiving an optical signal, wherein the semiconductor chip is disposed in a first plane; and

an optical signal transfer device that directly contacts the light-receiving element for transferring the optical signal from an arithmetic processing apparatus into the semiconductor chip, wherein the optical signal transfer device is disposed in a second plane that is spaced apart from the first plane,

wherein the optical signal transfer device is embedded in a mounting substrate on which the semiconductor chip is mounted, wherein the light-receiving element is formed in a cylindrical shape on the semiconductor chip on a side thereof that is opposite to the mounting substrate, and the light-receiving element is inserted in contact holes and bonded to the optical signal transfer device to thereby connect the light-receiving element to the optical signal transfer device.

12. (Currently Amended) A semiconductor device, comprising:

a mounting substrate;

at least one optical signal transfer device completely embedded in the mounting substrate such that the at least one optical signal transfer device is completely surrounded by the mounting substrate, wherein the at least one optical signal transfer device is adapted to transfer an optical signal;

a plurality of semiconductor chips mounted on the mounting substrate; and

a light-receiving element formed in at least one of the semiconductor chips and that is connected to the optical signal transfer device for receiving the optical signal,

wherein the optical signal is transferred among the plurality of semiconductor chips through the optical signal transfer device, wherein the optical signal transfer device is formed in a lattice configuration and embedded in the mounting substrate, wherein a plurality of selected ones of said optical signal transfer devices extend in a first direction, and wherein a plurality of selected others of said optical signal transfer devices extend in a second direction different than the first direction and intersect the plurality of selected ones of said optical signal transfer devices.

C1

13. (Previously Amended) A semiconductor device comprising:

a mounting substrate and at least one optical fiber disposed in a first plane and embedded in the mounting substrate for transferring an optical signal;

a plurality of semiconductor chips mounted on the mounting substrate, wherein the semiconductor chips are disposed in a second plane that is spaced apart from the first plane; and

a light-receiving element formed in at least one of the semiconductor chips and that directly contacts the optical fiber for receiving the optical signal,

wherein the optical signal is transferred among the plurality of semiconductor chips through the optical fiber.

14. (Currently Amended) A semiconductor device, comprising:

a semiconductor chip and a light-receiving element formed on the semiconductor chip for receiving an optical signal; and

an optical signal transfer device connected to the light-receiving element for transferring the optical signal from an arithmetic processing apparatus as an optical signal into the semiconductor chip, wherein the optical signal transfer device is a light-emitting surface that is formed in [the] a mounting substrate,

wherein the light-receiving element is formed in a cylindrical shape on the semiconductor chip on a side thereof that is opposite to the mounting substrate, and the light-receiving element is inserted in contact holes and bonded to the optical signal transfer device to thereby connect the light-receiving element to the optical signal transfer device.

C1

15. (Previously Amended) A semiconductor device, comprising:

a mounting substrate;

at least one optical signal transfer device embedded in the mounting substrate, wherein the at least one optical signal transfer device is adapted to transfer an optical signal;

a plurality of semiconductor chips mounted on the mounting substrate; and

a light-receiving element formed in at least one of the semiconductor chips and that is connected to the optical signal transfer device for receiving the optical signal,

wherein the optical signal is transferred among the plurality of semiconductor chips through the optical signal transfer device, wherein the optical signal transfer device is formed in a lattice configuration and embedded in the mounting substrate, wherein the light-receiving element is formed in a cylindrical

C1 shape on the semiconductor chip on a side thereof that is opposite to the mounting substrate, and the light-receiving element is inserted in contact holes and bonded to the optical signal transfer device to thereby connect the light-receiving element to the optical signal transfer device.

16. (Cancelled)